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CANEBRAKE

Agricultural Experiment Station,

UNIONTOWN, ALABAMA.

BULLETIN NO. 9, - - - 1890.

— SUBJECTS —

CROPS FOR ENSILAGE,  
FORAGE PLANTS,  
AND GRASSES.

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**AGRICULTURAL EXPERIMENT STATION,**  
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SORGHUMS AND MILLETS FOR ENSILAGE.

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W. H. NEWMAN, Assistant Director.

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April 8th, 1889, seven varieties of sorghums and millets were planted for ensilage on 1-20 acre plots, unfertilized, on "Black Slough," bottom land.

The plots were laid off in four foot rows in February, and bedded. Early Amber, Early Orange, Kaffir Corn, Large African Cane, and yellow Milo Maize, were planted from 18 to 30 inches in the drill. Cattail or Pearl Millet was sown very thickly in the drill, and Teosinte was checked four by four. Each plot was hoed twice and cultivated with the scrape the entire season. Teosinte did not make as large a growth as was expected, and was yellow and sickly in appearance. Each hill tillered well but only made a growth of about five feet.

Early Orange, large African cane, yellow Milo Maize, and Early Amber made the largest growth, and produced the largest yields of ensilage.

Kaffir corn made a short stocky growth and was not eaten readily by cattle.

Pearl Millet made a very good growth but cannot be compared with sorghum as an ensilage crop. On very rich land it is good for soiling. From four to eight cuttings can be gotten during the season.

Stock preferred Early Orange and Early Amber cane, and would pick over a mixed pile for them.

Each plot was cut July 19th, and weighed, and on the 20th were cut and put in the silo. Table I gives the weights of each, and the weight of any fodder obtained the second cutting.



## EXPERIMENT WITH SORGHUMS AND MILLETS FOR ENSILAGE.

Table I.

VARIETIES.	Time cut.	Yield of green food per acre. lbs.	Time of 2nd cutting.	Yield of dry food per acre lbs. 2d cutting
1 Early Amber Cane.....	July 19.	23,000	Sept. 9.	5680
2 Early Orange Cane.....	July 19	29,960	Sept. 9.	8300
3 Kaffir Corn.....	July 19.	16,920	Sept. 9.	2720
4 Large African Cane.....	July 19	26,880	Sept. 9.	5180
5 Pearl Millet.....	July 19.	13,800	Sept. 9	2900
6 Yellow Milo Maize.....	July 19.	25,600	Sept. 9.	4600
7 Teosinte.....	July 19.	12,400	Sept. 9.	2300

When cut for ensilage each plot was more or less headed, except the Teosinte, which will not head in this latitude. Early Orange, Early Amber, and large African cane, were more fully matured, the grain being in the milky state.

A second cutting was obtained September 9th, and cured for hay. Early Orange, early Amber, and large African cane producing the largest yield.

## CHICKEN CORN.

One-fourth acre was sown to chicken corn, broadcast, April 2nd, and cut July 20th. The chicken corn was sowed broadcast to be cut for hay, but was used for filling the silo. The grain was in the milky state when cut. It yielded at the rate of 22,520 pounds of green food per acre, first cutting, and 3,760 pounds cured hay, the second cutting, September 30th.

In sowing chicken corn for ensilage it is best to sow in three foot rows and from 12 to 18 inches in the drill; when sowed broadcast it is very hard to handle when running through the cutter.

## PEA VINES FOR ENSILAGE.

October 3rd and 4th, 1888, the silo was filled with pea vines. The peas were sown broadcast on oat land in June, at the rate of two bushels per acre. They were plowed in with a two horse plow, and then the land was well harrowed.

As soon as the first pods began to ripen they were cut and

sunned for half a day, and then raked in wind rows, and left until the next, when they were run through the cutter.

The vines had made such a luxuriant growth, that they were very hard to handle, and one more man was needed in hauling and running through the cutter than for corn or sorghum.

From six to twelve tons of ensilage can be cut from one acre. When well pressed the vines make an excellent quality of ensilage, and the stock eat it readily. For late ensilage pea vines are about the best crop we can grow, but if they can be cured for hay we think they would pay better. They can be cured very easily if the weather will permit, and in the South, we always have good weather for curing hay in September and October.

When sowed in June they are generally ready to cut the latter part of September. On the "Black Prairie" lands the vines make a very rank growth, and unless sown very thickly, so as to cause them to make an upright growth, it is almost impossible to cut them with a mower. On an average we think two bushels per acre is heavy enough.

## CORN FOR ENSILAGE.

One half acre of "Shell Ridge" land was planted in corn for ensilage, March 23d, 1889, and fertilized with 200 pounds C. S. Meal. The plat was bedded to four foot rows, and the seed dropped from 12 to 18 inches in the drill. It was cultivated with the scrape, and received only one hoeing. July 18th, when the grains were in the "dough state" it was cut and weighed and placed in the silo. The plot yielded seven tons of silage.

The corn was more easily handled than sorghum or chicken corn, and was no trouble to pack in the silo. Sorghum and chicken corn were very hard to pack, and there was a layer one foot thick on top that was almost impossible to pack firmly before placing the corn and weights on. Corn will yield as much if not more silage than sorghum, and when it is cut at the proper stage and well preserved, cattle prefer it to sorghum ensilage.

We cut it when in the "dough state," and think it can be preserved better than when cut earlier or later. The stalk has not become too hard at that state, and there is no



waste. When cut in the "dough state" it is best to sun for half a day before running through the cutter, because it is too watery, and will be harder to keep.

When not planted too thickly each stalk will produce a very fair ear, and will make a more nutritious silage, and one that the stock will eat readily. The variety of seed used was the common field corn.

#### THE SILO.

The silo used is the ordinary above ground wooden silo.

The frame work is of 2 by 8 inch stuff, weather boarded on the outside, with two layers of matched plank, with tarred paper between, on the inside.

It is covered with a good shingled roof.

The floor is of dirt about two feet above the level of the soil.

Two doors are used, one at the top and one at the bottom of the silo in the side.

The top door is used in filling and when the silo is first opened. The bottom door is used when the ensilage has been removed down to its top.

Great care must be used to have the bottom door air tight.

The first season about two feet of the ensilage next to the bottom door spoiled on that account.

The inner layer of matched planks should be well painted, or better covered with a good coating of tar to prevent decay. The inner layer was not painted or tarred, and the planks used are beginning to decay after only two seasons of use.

The frame of the silo must be of timbers strong enough to prevent springing under the pressure of the ensilage. Unless the silo is perfectly air-tight it will be a waste to fill it, for more or less of the ensilage is sure to decay and spoil. The ensilage was run through a cutter and conveyed into the silo by means of a carrier.

The cutter was set to cut the corn or sorghum into  $\frac{1}{2}$  inch pieces. As it fell in the silo, it was leveled out and the sides and corner well packed. The ensilage was covered with about twelve inches of dry hay, that was run through the cutter, and then with two layers of plank. Cord wood was used as weights and answered very well for the purpose.

In placing the silo, the farmer must use his own judgment and build it when it will be most convenient to fill and feed from. The nearer the stalls the better, for the ensilage is heavy and when a number of cattle are fed it requires a considerable amount of labor to feed, unless very near. Cattle learn to eat ensilage more readily than horses and mules, but they can be taught to eat and soon learn to relish a small amount. When corn and saccharine sorghums are used as ensilage no trouble is experienced in getting cattle and pigs just taken from the range to eat it. Ensilage is now being used in many localities in the South and with good results.

#### CONCLUSIONS.

(I). From two years experience with the silo we believe it can be successfully used by the farmers of the State.

The most important points to notice is the proper construction and convenience of location.

If perfectly air-tight and a sufficient quantity of ensilage is placed in the silo, there is little danger of loss, it being heavy enough in itself to pack sufficiently tight, but a layer of straw and boards with weights is the safest.

(II). That corn when planted in the drill from 12 to 18 inches apart and 3 to 4 feet in the row is the best crop for ensilage that can be grown.

(III). That the large varieties of saccharine and non-saccharine sorghums rank next to corn as an ensilage crop, the saccharine being better than the non-saccharine.

(IV). That pea vines, if they can be cured for hay will pay better than when used for ensilage.

(V). That there is little difference in the quality of the ensilage when slowly and quickly filled, provided the crop is cut at the proper stage.

The ensilage is a little more acid on account of the greater per cent. of moisture when quickly filled unless the crop is allowed to wilt well before filling.

Pea vines, when put in as soon as cut, make a very slimy and unsightly mass of ensilage; when well wilted they make very good ensilage and cattle will eat it greedily.



## FORAGE CROPS.

## ALFALFA OR LUCERNE.

*(Medicago Sativa.)*

October 18th, 1888, one-fifth acre of unfertilized "Black Slough" bottom land was seeded to Alfalfa.

The land had been in peas which were cut October 3rd, for ensilage.

The plot was thoroughly broken with a two-horse plow and harrowed until in excellent condition for small seed.

The plot was laid off in rows 18 inches apart and the seed applied at the rate of 20 lbs. per acre, and carefully but slightly covered with a hoe.

A good stand was obtained and the plants made a stout enough growth to withstand the winter. When sown in the fall, it is best to sow in September so as to be certain that the plants can make a strong growth before winter sets in. If sowed in the spring, February is the best month, for then the young plants grow well and outgrow the weeds, and can be cultivated more readily.

When planted later in the spring the hot sun will be apt to kill them.

The first cutting was obtained May 7th, 1889, and yielded 1,140 pounds of cured hay per acre.

The second cutting was obtained August 10th, and yielded 2,300 pounds of cured hay per acre.

The winter of 89-90 was very mild, and on January 18th, 1,800 lbs. of green food was cut, and when the severe freeze of March 1st occurred the plants were from 18 to 20 inches in height, and in a week more would have been ready for the mow. On May 7th and June 17th, the plot was again cut and yielded 1,200 and 1,220 pounds of cured hay respectively.

The hay is very easily cured, but will not stand much sun, for it soon loses its leaves.

When cut as soon as the dew is off in the morning it can be raked in windrows by twelve and hauled up and housed by

three or four in the afternoon. On a very warm day we have hauled it up and housed it three hours after cutting, and it kept perfectly. It should be cut as soon as possible after the blossoms begin to appear. It soon becomes woody after the blooms appear, and is not as nutritious as when the first blooms open.

It is better to cut it too early than too late, for you gain more in quality than you lose in quantity. When cut at the proper stage and well cured it compares very favorably with the best quality of clover hay.

Alfalfa, like clover, peas, and other legumes, is a collector of plant food, and soon enriches the soil. When it is continually cut for hay it must be fertilized to get the best returns, and this can be done by top-dressing with stable or cow manure in the fall. Commercial fertilizers can be applied in the spring or summer broad cast or between the rows.

Alfalfa sends down its long tap root, and brings up the mineral elements that cannot be reached by other plants, and like the other legumes it obtains a large amount of its nitrogen from the atmosphere, and nitrogen is one of the most costly elements that plants need. The tap roots bring up phosphoric acid, potash and lime, so it is a complete fertilizer. There is some doubt about lucerne being able to stand grazing. Some farmers claim that it will stand grazing, while others claim that one season's grazing will destroy about half if not more of the stand. We have never grazed any, but have seen it sowed broadcast that stood six very close cuttings in one season.

For a permanent soiling and hay crop lucerne is the best crop that can be grown. The plants are perennial, and will live for twenty or thirty years, and still produce fine cuttings. It grows well on black and red prairie lands, but will not grow to perfection unless the land is well drained. The tap roots rot as soon as they reach the stagnant water, and on such lands both dry and wet weather affect the plants very seriously.

## BOKHARA CLOVER.

*(Melilotus Alba.)*

This clover is best known in the canebrake as Melilotus, and is very seldom called Bokahra clover, although it is adver-



tized by the seedsmen by the latter name. The plants are biennial, and resemble lucerne somewhat in their growth. Melilotus will grow from four to eight feet in height, the second season. It grows remarkably well on all kinds of prairie land, and especially well on the "white lime rock knolls," upon which nothing else will grow.

It is partial to a lime soil and will grow as well on blue lime rock, dug from cisterns, as on any kind of soil.

Like the other legumes, it is a great collector of nitrogen, the very element that prairie soils need. It also sends its tap root down deep into the subsoil and brings up the mineral elements that all plants need. Several tons of vegetable matter will be returned each season to the soil when a crop of melilotus is on the land from the tops alone, and not less than a ton is obtained from the roots. Sowing the waste canebrake lands in Melilotus, and letting it re-seed itself for several years is the best and cheapest way of restoring them to their original fertility. The stems rot very quickly, and in six months after the plants seed and die the stems will have decayed. If the land is plowed in the fall and bedded in the spring it will be in as fine a condition as it is possible to get the prairie lands.

Stock are not fond of green Melilotus, or of the hay, but they can be "educated" to it.

The hay, or when fed in the green state, imparts a very peculiar flavor to milk and butter. Some persons object to the flavor, while others think it adds to the milk or butter. Chemical analysis shows that the melilotus hay is almost equal to lucerne and clover as a fodder. It is the earliest spring pasture that we have, furnishing good grazing in February and March, and often in January, when a year old.

Horses, cows, and sheep crop it very closely in the spring, and some animals will eat it readily all the season. The first year it will remain green until December, and some seasons up to the first of January. It takes a very severe frost to kill it when several months old. When young it seems to stand the severest freezes.

March 21st, the thermometer fell to 19°, and melilotus that was sowed in February, and the plots that had re-seeded themselves in August were not hurt. That which was one year old

and about 18 inches high was killed to the ground. When the melilotus re-seeds itself in July and August it can be plowed up and an excellent crop of oats can be raised, and the melilotus stand not be damaged.

A favorite way of planting it is sowing with the oats in the spring or fall. When the oats are cut the melilotus comes out and affords good pasturage. It is best to plow and harrow the melilotus after it has re-seeded itself to get the best returns the third year.

To get a good cutting of hay the first season, one half or a bushel of seed must be sown per acre.

To get a field started in melilotus it will only be necessary to sow one peck, and the second year it will re-seed, and a very heavy stand will be secured.

The first season one or two cuttings can be obtained, but to get the best results the second season, it is best to cut only once.

From one to three tons of cured hay can be obtained at a cutting. The time of cutting depends upon the growth of the plants. When about two feet high is generally the best.

The second season the first cutting is obtained in May, and sometimes in April. Some prefer to cut it in April before it gets too hard and woody, while others cut it when in full blossom. The second cutting is in July.

When cut the third time the plants seldom come out and the field will have to be resown.

Sometimes the second cutting kills so much of it that it will not re-seed. If the field is to run in melilotus for a number of years it is best not to cut twice the second season.

From three to six tons of hay can be cut the first cutting, and generally about half that amount the second.

The hay is very easily cured, and like lucerne, loses its leaves when sunned too long.

Cut in the morning and put in good size cocks in the afternoon and it can be hauled and housed the next day. On a very warm and dry day it can be housed the day it is cut. It makes beautiful hay, and has a delightful odor that can be detected over a hundred yards from the field.

Besides being excellent as a fertilizer and soil renovater and



fodder plant, it is a fine honey plant. It is sometimes called honey plant and is advertised as such.

Bees are very fond of it, and the only objections are the flavor it imparts, and the short time of flowering. By having large fields and cutting several times, the flowering season can be prolonged three or four months.

The roots decay quickly and act as drains; the difference in the soil where the second years growth has died, and that where no melilotus is planted, is very perceptible. Melilotus land will dry about one day earlier.

#### CLOVER.

(*Trifolium Pratense.*)

• Plots that were sown in clover in 1884 continue to yield two to four cuttings of excellent hay each season. Up to date, July 15th, 1890, one plot has been cut three times, and will furnish another cutting before the season is out. The plots have only received two top dressings of cotton seed meal, at the rate of 200 lbs. per acre.

One-fifth acre was seeded to clover October 18th, 1888. The land was "Black Slough" bottom, undrained, that had grown a crop of oats and peas the same season. The oats were cut June the 2nd, and the peas October 3rd.

The land was thoroughly prepared with a two-horse plow and well harrowed. The seed were sown at the rate of 20 lbs. per acre and harrowed in with a light two-section Thomas harrow.

A perfect stand was obtained and the plants grew off vigorously and made a stout enough growth to stand the winter.

The first cutting was obtained May 16th, 1889, and the second August 10th, and yielded 2,400 pounds of cured hay respectively per acre. The plot has been cut twice this season, May 16th and July 1st, and yielded 4,220, and 2,980 pounds of cured hay per acre.

The first cutting is always very hard to cure, and it takes two days sunning before it can be housed. We cut as soon as the dew is off and sun until late in afternoon, then rake into windrows and let stand until sufficiently cured, which takes until the afternoon of the second day. When cut the latter part of June or first of July, it can be cured in one day.

The time of cutting clover is when the first blossoms begin to turn brown. Like lucerne, if allowed to become too old, it is hard and woody and indigestible. Clover, like lucerne and melilotus, is a collector of nitrogen and is one of the best soil restorers. It is also a legume and a tap rooted plant, although its tap root does not extend to near the same depth as the lucerne, but it seems to stand the drouth as well. It grows better on drained land, and is not apt to be drowned out when young if sowed on drained land.

Where water stands for a day after a hard rain, it is useless to sow it in clover. The young plants are very easily drowned, and the roots of the old plants rot very quickly when there is much water in the soil.

No fertilizer was applied to the plot until May, 1890, and then it was top dressed with cotton seed meal at the rate of 250 pounds per acre. Unless the clover is grazed or kept well cut with the mower it will soon be overrun with weeds. We generally run the mower over several times to prevent the weeds from seeding, running the blade high enough not to cut the clover.

Clover is one of the best hay plants that can be grown on the prairie lands. It grows well on both the red and the black lands, and owing to the peculiar cracking of the lands it will reseed itself every year, and a perfect stand can always be kept.

The hay is of the finest quality but is not eaten as readily as lucerne by cattle. Sowed with orchard grass it will give a good pasture all the winter, and can be cut for hay in the spring.

Clover and orchard grass blossom at the same time, and can be sown together for a hay crop, for they are ready to be cut at the same time. When the field is to continue in clover for a number of years it is best not to cut but twice, letting the third crop go to seed and leaving the stems and leaves as a top dressing for winter protection.

There is very little danger of heaving on the black and red prairie lands. The white lands suffer most from it. The best time for fall sowing is between the first of September and the middle of October.

For spring, sow in January or February. From ten to thirty pounds of seed per acre can be sown. Twenty pounds will give about the best results.



## GERMAN MILLET.

For a quick crop of hay there is nothing better than German millet. Sow about the first of April on good rich soil that has been well prepared and fertilized, and a crop of hay can be cut in fifty or sixty days. In a good season it can be cut in forty-eight days.

Sow one bushel of seed per acre and harrow in lightly.

On good land from two to four tons of excellent hay can be cut. The millet is very easily cured and makes a good quality of hay. It can be sowed as late as the first of August, if good season for sowing can be had. All kinds of stock will eat the millet. It should be cut as soon as it is in full bloom. If the seed are allowed to ripen the quality of the hay is very seriously damaged.

It is a very exhaustive crop and should always be fertilized.

The millet, when sowed in April, can be followed by peas, and two good crops of hay can be grown on the same land in one season.

## GRASSES.

Herds grass, Kentucky Blue grass, Tall Meadow Oat grass, and Timothy, were sown in one-fifth acre plots October 18th, 1889. A good stand was obtained and they grew off well during the fall and winter, but they could not stand the dry weather that came in May, and each plot was very seriously damaged.

Not a pound of hay could be cut from any of the varieties. The winter of '89-90 was very mild, and the plots again came out and gave promise of a hay crop the following spring, but again they were damaged by the hot sun and not a cutting was obtained from any of the plots. There is a good stand at this time, July 18th, but no prospects of getting a cutting of hay.

Each variety was planted on rich "Black Slough" bottom. Their failure is due to the warm dry summers.

The above named varieties will not do for pasture or hay crop in the canebrake.

## ORCHARD GRASS.

(*Dactylis Glomerata.*)

One-fifth acre was seeded to Orchard Grass October 18th, 1888, and a perfect stand obtained. It grew off well and would have given good grazing during the months of January, February and March. It gave promise of a good cutting of hay in the spring, but it also succumbed to the dry and hot weather, and never grew tall enough to mow. The grass was not killed but only checked in its growth, and as soon as winter set in grew off vigorously, and would have given good pasturage all the winter and spring; at the present time, July 18th, it is excellent pasturage, and the stand has not been damaged by the warm weather. As a hay crop it is a failure, but for pasturage we think it will prove a success. If sowed in the fall, sow between the first of September and middle of October. If in the spring, from the middle of January to first of March.

We prefer fall sowing of these grasses and clovers. They stand our winters well, and get the start of the weeds in the spring.

## TEXAS BLUE GRASS.

(*Poa Arachnifera.*)

Texas Blue Grass propagates itself rapidly by underground root stocks, and when the sets are put out in one foot rows, and six inches in the drill, a good pasture will be obtained in one season. It is strictly a winter grazing grass, and gives good grazing for the months of December, January, February, and March.

The only reliable way of propagating it is by sets, and it is very costly, and not practicable, except on a small scale.

We have never met with any success in sowing the seed. Some contend that the stock will not eat it readily, but they will soon learn, and will become very fond of it. It stands the summers very well, and sprouts out as soon as the cool weather sets in. The best time to put out the sets is in September and October. A heavy growth of weeds during the summer, where the blue grass is well set, does not damage it. They protect from the rays of the sun and it starts off earlier in the fall.



## COW PEAS.

Peas have been grown very extensively on the station, both for hay and as a fertilizer.

The cow pea is the best annual plant that can be grown on the prairie soil for a hay crop, and as a fertilizer. The increased yield, by leaving the vines, will not pay for the hay that can be cut, and when cut the land is much easier prepared. On the black and red prairie lands the different varieties of cow peas grow to perfection, and the effect of one crop of vines on corn and cotton is very remarkable. Growing a good crop of vines on the black or red prairie lands is the cheapest and quickest way of improving them.

Melilotus grown for several years in the "white bald spots" is the best way of improving them, there being too much lime in them for the peas to do well.

Like the other legumes the vines are "collectors of nitrogen," their tap roots bring up the other elements that the plants need, they shade the land well, and prevent the injurious effect of the hot sun. Turning them under green has proved injurious to the land, and can not be practiced in the South. Fall plowing of the pea-vine land is very beneficial in the prairie belt of Alabama but can not be practiced in the sandy lands.

Sow from two to three bushels of peas per acre; plow in with a good double team, and harrow the land well. Some sow a little corn, chicken corn, or sorghum, to hold the vines so they can be cut more easily. When they are sowed thickly it is not necessary.

To raise peas for seed in the canebrake, sow in three foot rows in April on red prairie land.

We have never had them to bear when sown on the black lands. When curing the vines for hay we cut as soon as the dew is off and let them remain until late in the afternoon, when we rake in wind rows, and let stand until the next afternoon. The second afternoon they can be put in tall narrow cocks. In very warm weather they can be hauled and housed the second afternoon.

In feeding the vines it is always best to cut them up, otherwise there is a very great waste.

## BARLEY AND RYE FOR WINTER SOILING.

One-quarter acre plot was seeded to barley October 5th, 1889. The plot was bedded in two foot rows, and the seed sown at the rate of two bushels per acre.

Three cuttings were obtained before the severe freeze in March. The plot yielded 23,100 pounds per acre. But for the freeze a fourth cutting would have been obtained. Rye was sown on the 21st of September, and four cuttings were obtained. Rye will produce as much per acre as the barley, but the cattle seemed to prefer the barley. A good plan would be to sow every other row with barley or mix the seed before sowing.

The barley stood the freeze much better than the rye.

Unless the land is very rich it is better to sow rye.

Northern grown seed will not do for soiling. Seed from North Alabama or Tennessee will do very well for grazing, when sown broadcast, but more southern seed are better.

## SUMMER SOILING.

For summer soiling sorghum is the best crop that can be grown. Sow in April in three foot beds and about 12 inches in the drill, or sow it thin in the drill. When sowed thinly in the drill the stalks are finer and the cattle will eat them more easily. From three to six cuttings can be obtained in one season, and one acre will yield from thirty to forty thousand pounds.

Early Amber and Early Orange gave the best results. The saccharine varieties are preferred by all kinds of stock.